

PEROTIS AITON (GRAMINEAE) IN AUSTRALIA AND SOUTHEAST ASIA

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Summary

A survey of the 3 species of *Perotis* Aiton (Gramineae) in Australia and Southeast Asia is given. One species, *P. clarksonii* is described as new, while *P. rara* is recorded from Southeast Asia for the first time.

Introduction

Perotis Aiton (Gramineae) is a small genus of about 10 Old World tropical species. By some (Hubbard in Bor 1960) it has been regarded as belonging to a separate tribe, Perotideae, while others have included it in the Lappagineae (Pilger 1956), Zoysiaceae (Jacques-Felix 1962), or Cynodonteae-Zoysiinae (Clayton & Renvoize (1986).

Until about 10 years ago only one species, *P. rara* R. Br., was known to occur in Australia. Simon (1981) mentioned the presence of *P. indica* (L.) Kuntze in Queensland, and a third species, new and closely related to *P. rara*, also from Queensland, is described here.

Perotis

Perotis Aiton, Hort. Kew. 1: 85 (1789). **Type:** *Perotis latifolia* Aiton, *nom. superfl.* (based on *Saccharum spicatum* L. = *Perotis indica* (L.) Kuntze).

Xystidium Trin., Fund. Agrost. 102, t. 2 (1820). **Type:** *Xystidium maritimum* Trin. (= *Perotis rara* R. Br.).

Annuals (in Australia). Ligules collar-shaped, membranous. Blades broadest at the rounded to amplexicaul base. Inflorescence a spike-like raceme. Spikelets 1-flowered, solitary, falling entire at maturity, pedicels persistent. Glumes enclosing the floret, dorsally rounded, 1-nerved, long-awned. Rachilla process absent. Lemma membranous, 3-nerved, acute, muticous. Anthers 3. x = 10.

Distribution: About 10 species in the Old World tropics, 3 in Australia.

Anatomy: See Clayton and Richardson, Kew Bull. 27: 44 (1973).

Key to the species

- 1. Racemes laxly spikeled; spikelets at maturity reflexed; lower glume gradually passing into awn, body not distinct from awn; callus up to 1.5 mm long, obconical, slightly flattened, laterally pubescent 2
- Racemes densely spikeled; spikelets at maturity patent; lower glume with the body distinct from awn; callus up to 0.3 mm long, terete, stipe-like, puberulous all over. Caryopses terete 2. **Perotis indica**
- 2. Leafblades stiffly patent, distichous at short intervals; glumes smooth, glabrous to shortly pubescent; awns at base with c. 1 mm long, spirally twisted hairs along the infolded margins; caryopses flattened, sulcate 1. **Perotis clarksonii**
- Leafblades more or less erect, rather flaccid, not distinctly distichous; glumes more or less scaberulous to setulose; awns rarely setulose at base, bristles then at most 0.5 mm long, straight; caryopses terete 3. **Perotis rara**

1. *Perotis clarksonii* Veldk., sp. nov.

Planta annua, ad 40 cm alta; foliorum laminae patentes, 1.7-2.5 cm longae, 1.7-2.3 mm latae, planae ad involutae; racemi laxi, 12-27 cm longi, incomplete exserti; spiculae patentes sub anthesi, (35-)47.5-55 mm longae (callo 0.75-1.5 mm longo, obconico leniter complanato, saltem lateraliter pubescenti excluso), glumae gradatim in aristis transientes laeves glabrae ad tote breviter pubescentes, costa scaberula; aristae longe pilosae ad basin pilis lenibus spiraliter tortis ad 1 mm longis argenteis; caryopsides complanatae sulcatae.

Typus: Australia, Queensland. COOK DISTRICT: 0.8 km South of the Laura River crossing on the Peninsula Development road, 15°35'S, 144°27'E, 90 m altitude, 7 March 1987, *Clarkson & McDonald* 6802 (holo: L!; iso: BRI,CANB fragm.!,DNA,NSW!,PERTH,QRS).

Annual, up to 40 cm high. Leaf blades patent, 1.7–2.5 cm × 1.7–2.3 mm, flat to infolded, bristly at base and along the throat of the sheaths. Racemes lax, 12–27 cm long, not completely exerted. Spikelets patent at anthesis, (35–)47.5–55.0 mm long (excluding the 0.75–1.50 mm long, obconical, slightly flattened, at least laterally pubescent callus). Glumes passing gradually into the awns, smooth, glabrous to shortly pubescent all over, midrib scaberulous, awns long-hairy at base, hairs soft, becoming spirally twisted, up to 1 mm long, silvery. Caryopsis flattened, sulcate. **Fig. 1.**

Specimens examined: Australia, Queensland. COOK DISTRICT: 30–40 miles [48–64 km] S of Coen, 14°15'S, 143°10'E, *Symon* 4843 (ADW,AHUC, CANB!, K, L!); Koolburra Station, 15°18'S, 143°58'E, *Clarkson* 3152 (BRI,CANB!, L!); *Clarkson & McDonald* 6802, the type (see above); 15 km W of Battle Camp Road, 29 km NE of Laura, 15°32'S, 144°27'E, *Forster* 4017 (BRI,L fragm.!), Chillagoe-Wrotham Park Road, 16°45'S, 144°5'E, *Simon & Clarkson* 3584 (BRI,CANB!, L!); 3 miles E of Mareeba, *Thorne* 21162 (BI,L fragm.!).

Distribution and habitat: Far north-eastern Australia; grows in savannah woodland with a grassy understorey, at low altitude.

Collector's notes: Small, tufted grass; nodes red; underside of leaves dark wine red, dark green above; scape and inflorescence pale green.

Note: The awns of the glumes in *P. rara* exceptionally have rather long bristles up to 0.75 mm long, which then also have a tendency to become spirally twisted. An example from the Cook District is *McKee* 9241 (BRI,CANB!) from 5 miles (8 km) S of Dimbulah (c. 17°14'S, 145°6'E), where not only are the awns long-hairy but the glumes and rachis are as well. I (JFV) am not too sure whether this should or should not be regarded as a hairy form of *P. rara* or of *P. clarksonii*. A similar specimen is *Thorne* 21162 (BRI,L fragm.!,RSA) from 3 miles (4.8 km) E of Mareeba (**Fig. 2A & B**). In their leafblades they resemble *P. clarksonii*.

From the Northern Territory I have seen a few specimens with the *P. rara* type of leaf blades, very rough glumes, and awns with such long hairs. I am inclined to retain these in *P. rara*: *Latz* 564, Frew River, 3 miles (5 km) ENE of Epemarra Homestead, c. 20°30'S, 135°30'E (CANB!,NT), a mixture of 'typical' *P. rara*, suggesting that the hairy plant is just a form of that; *Perry* 3258, 9 miles (14.4 km) S of Undoolya Station, 23°41'S, 134°2'E (CANB!); *Winkworth* 815, 15 miles (24 km) SW of Alcoota, 22°50'S, 134°27'E (CANB!).

Etymology: Named after Mr John Richard Clarkson, Mareeba, who collected three out of the six known representatives of this new taxon, in recognition of the many important collections he has made in northern Queensland.

2. *Perotis indica* (L.) Kuntze, Rev. Gen. Pl. 2 787 (1891); *Anthoxanthum indicum* L., Sp. Pl. 1: 28 (1753). **Type: *Hermann* s.n. (holo: LINN).**

Saccharum spicatum L., Sp. Pl. 1 54 (1753); *Perotis latifolia* Aiton, Hort. Kew. 1: 85 (1789), *nom. superfl.*; *Perotis spicata* (L.) Dur. & Dur., Syll. Fl. congol. 628 (1909); *Perotis latifolia* var. *typica* Domin., Bibl. Bot. 85: 285 (1915), *nom. inval.*
Lectotype: Hb. Linn. 77.5 (holo: LINN).

Alopecurus bengalensis Houtt., Nat. Hist. 2/13: 206, t. 90, f. 4. (1782) **Type:** not indicated (not found in Hb. Houttuyn in G or L).

Perotis hordeiformis Nees in Hook. & Arn., Bot. Beechey Voy. 248 (1838); Fl. Afr. Austr. 1: 139 (June 1841). **Type:** *Royle* 280 (holo: K; iso: LIV).

Perotis glabrata Steud., Syn. 1: 186 (1854). **Type:** *Cuming* 1399 (holo: P; iso: L).

Perotis birmanica Gand., Bull. Soc. Bot. France 66: 301 (1920). **Type:** *Mokin* 560 (holo: P).

Perotis chinensis Gand., Bull. Soc. Bot. France 66: 301 (1920). **Type:** *Chanet* 14 (syn: P), 137 (syn: P,US) (?isosyn: an unnumbered *Chanet* collection in L).

Perotis perrottetii Gand., Bull. Soc. Bot. France 66: 301 (1920). **Type:** *Perrottet* 1290 ('1390') (holo: P; iso: L).



Fig. 1. *Perotis clarksonii*: A. Habit $\times 0.67$. B. Spikelet $\times 4$. C. Area at base of awns $\times 16$. D. Caryopsis, ventral view $\times 16$. A–D, Clarkson 3152, iso at BRI.

Annuals, up to 75 cm high. Leafblades 1–3 cm × 2–10 mm, base more or less cordate to amplexicaul, usually bristly along the basal margins. Spike 2–20 cm long. Spikelets patent at maturity, 6.5–30.0 mm long (excluding the up to 0.3 mm long, terete, stipe-like, puberulous callus). Glumes scaberulous all over, with midrib scabrous; lower glume 1.5–2.5 mm long, not gradually passing into the up to 16 mm long awn. Caryopsis terete. $2n = 20, 40$.

Distribution and habitat: India to E China (Hopeh), throughout Malesia to Australia (Queensland, Cook District, Walsh River); introduced elsewhere in tropical countries. It grows in sandy soil near the coast, under *Casuarina* sp., in coconut plantations, dry grasslands, usually at low altitudes, rarely as high as 1065 m in Malesia.

Note: In most works *P. indica* and *P. hordeiformis* are regarded as distinct and are distinguished as follows:

- | | |
|---|------------------------|
| Callus acute, 0.2–0.5 mm long; glumes not conspicuously ciliolate on the keel; lower glume obscurely lobed, evenly and closely hairy all over, with hairs very short, white, appressed to spreading | P. indica |
| Callus truncate, up to 0.2 mm long; glumes conspicuously ciliolate on the keel; lower glume abruptly acute to more or less obtuse, with hairs in close lines, especially at base | P. hordeiformis |

In fact the length and shape of the callus are variable, and the hairs may be both irregular and in rows on the same specimen. Thus both names are taken to refer to only one species here.

3. *Perotis rara* R. Br., Prod. 172 (1810); *Perotis rara* var. *typica* Domin., Bibl. Bot. 85: 285 (1915), *nom. inval.* **Type:** *R. Brown* (holo: BM; iso: NSW).

Xystidium maritimum Trin., Fund. Agrost. 102, t. 2 (1820); Mem. Acad. Sc. St. Petersb. VI, 6: 266 (1915); *Perotis rara* var. *maritima* (Trin.) Domin., Bibl. Bot. 85: 285 (1915). **Type:** *Chamisso* s.n., *Eschscholtz* s.n. (syn: LE).

Xystidium barbatum Presl, Rel. Haenk. 1: 228 (1830). **Type:** *Haenke* s.n. (holo: PR; iso: MO).

Perotis longiflora Nees in Hook. & Arn., Bot. Beechey Voy. 247 (1838); *Perotis latifolia* var. *longiflora* (Nees) Domin., Bibl. Bot. 85: 285 (1915). **Lectotype:** *Vachell* 38 (holo: K; iso: GCE).

Perotis patula Nees in Hook. & Arn., Bot. Beechey Voy. 248 (1838). **Type:** *Meyen* s.n. (holo: K).

Perotis rara var. *euryphylla* Domin., J. Linn. Soc. 41: 274 (1912). **Type:** *Clement* s.n. (holo: K).

Perotis macrantha Honda, Bot. Mag. Tokyo 41: 638 (1927). **Type:** *Yamazaki* s.n. A° 1923 (holo: TI).

Annuals, up to 40 cm high. Blades 1–5 cm × 1–4 mm, rounded at base, bristly along the margins at base and in the throat. Spike 8–30 cm long. Spikelets reflexed at maturity, (7–)13–35 mm long (excluding the up to 1.5 mm long, obconical, slightly flattened, laterally pubescent callus). Glumes scaberulous all over, with midrib scabrous, gradually passing into the awns. Caryopsis terete. $x = ?$. **Fig. 2C–F.**

Distribution and habitat: Asia (Vietnam, Taiwan, SE China) to Australia (excluding Victoria, Tasmania). Grows on beach; eucalypt savanna; sandy river banks; locally common, 0–275 m altitude.

Uses: Decorative in flower; cattle are said not to like it but it might supply some slight grazing for sheep (Vickery, Fl. N.S.W. 19/2: 305 (1975)).

Vernacular name: Comet grass (E).

Note: This species is here first reported for continental Asia based on the following specimens from Vietnam present in L: *d'Alleizette* 2033 (Hanoi), *Balansa* s.n. (27 Oct.

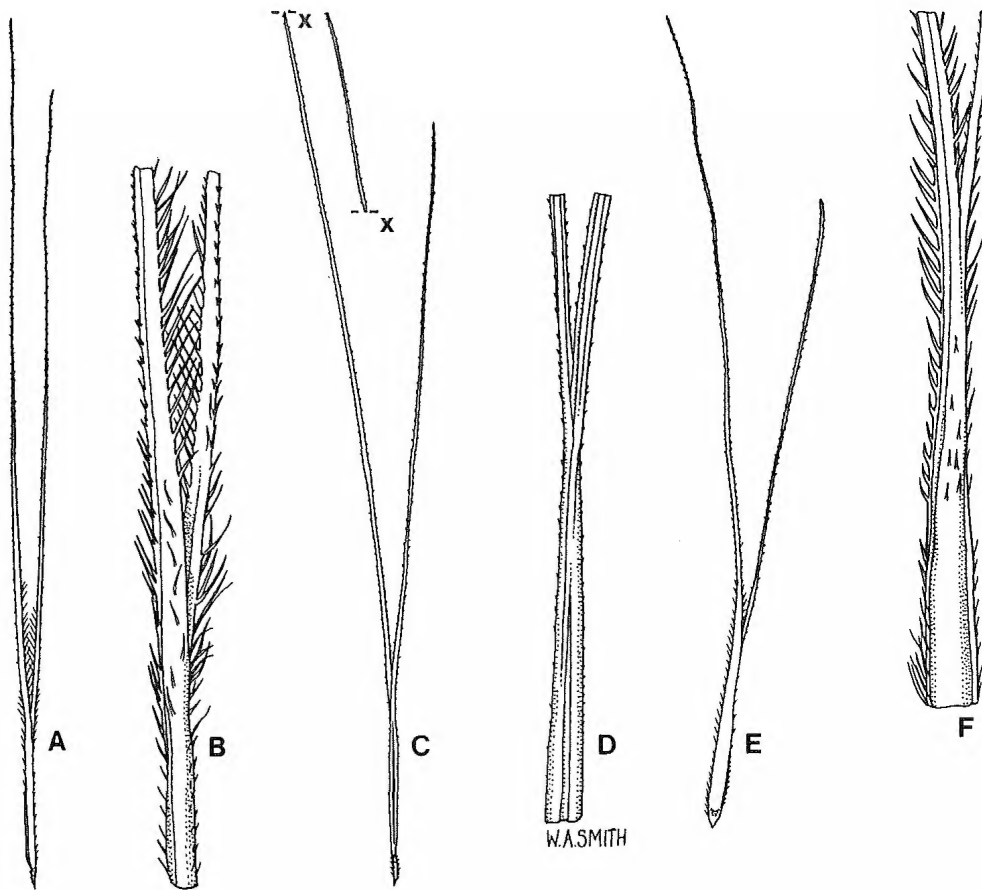


Fig. 2. Intermediate specimen between *Perotis rara* and *Perotis clarksonii*: A. Spikelet $\times 4$. B. Area at base of awns $\times 16$. C-F. Two specimens of *Perotis rara*. C,E. Spikelets $\times 4$. D,F. Area at base of awns $\times 16$. A,B, Thorne 21162, BRI; C,D Clarkson 5453, BRI; E,F Clarkson 5707, BRI.

1876, Quinhon), *Balansa* 378 (Baie de Fi-tsi-long), and *Robinson* 1039 (Natrang). It is also recorded for Taiwan (as *P. macrantha*) and China (as *P. longiflora* and *P. patula*).

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